

WINGS AND THINGS THAT FLY

A Subject Sampler
Kindergarten-3rd Grade

INTRODUCTION

Long before the International Space Station, the space shuttle and even before Orville and Wilbur Wright and Kitty Hawk, Nature gave us the first flyers. Along came man and a natural curiosity about flight. Man began to imitate "Nature's Flyers". Visit the web through this subject sampler to investigate what man learned from "Nature's Flyers" and how they influenced flight in our time.

The purpose of this subject sampler is to learn more about Nature's Flyers. During this journey through flight you will discover the difference between true flight and glided flight, flight patterns, and if you chose to, participate in activities related to Nature's flight.

The objective of this sampler will be to compare Nature's Flyers with man-made flyers and create a presentation that shows how Nature's Flyers influenced flight in our time.

Flap your wings and good luck on your journey!

Wings and Things That Fly

Fly along with the Ancient Flyers to uncover these facts:

1. What is another name of the Pterosaurs?
2. What are the characteristics of the Pterosaurs?
3. Did they have the same body and wing build as a modern bird or bat?
4. Did they fly or glide?



Ancient Flyers

Information about Ancient flyers

<http://wings.avkids.com>

K-8 Aeronautics Internet Textbook (beginner, intermediate, and advanced level)

click on Principles of Aeronautics

click on animals

click on ancient flyers

www.cis.upenn.edu/~ircs/cogsci2000/pteranodon.html

<http://www.oceansofkansas.com/page5.html>

View a Pteranodon Dig

<http://www.benjaminwaterhousehawkins.com/pteranod.htm>

Pictures

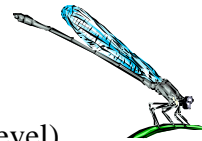
www.rain.org/~philfear/pter.html

Make a paper pteranodon

INSECTS

Buggy facts to uncover:

1. How long have insects been around?
2. What are the characteristics of insects?
3. How do insects fly?



<http://wings.avkids.com>

K-8 Aeronautics Internet Textbook (beginner, intermediate, and advanced level)

click on Principals of Aerodynamics

click on animals

click on insects



<http://www.howstuffworks.com/news-item223.html>

Insect Flight Aids Microplane Design

<http://entweb.clemson.edu/museum/insectdf/index.htm>

Pictures

Birds

Flap your wings to find these facts.

1. What are the characteristics of birds?
2. What are the mechanics of bird flight?
3. What is glided flight?



<http://wings.avkids.com>

K-8 Aeronautics Internet Textbook (beginner, intermediate, and advanced level)

Click on Principles of Aeronautics

Click on animals

Click on birds



http://www.nasaexplores.com/lessons/01-083/k-4_2-t.html

Is It A Bird, Or Is It A Plane?

<http://www.powersource.com/bowden/birds.htm>

Pictures of birds

<http://home.earthlink.net/~cmsquare/calleaf.html>

Pictures of bats

Teacher Resource lesson

http://www.nasaexplores.com/lessons/01-071/k-4_index.html

How Are Planes Like Birds?

Bats

Echo's of facts to find here.

1. What are the characteristics of bats?
2. What makes a bat an efficient flyer?



<http://wings.avkids.com>

K-8 Aeronautics Internet Textbook (beginner, intermediate, and advanced level)

Click on Principles of Aerodynamics

Click on Animals

Click on Bats

Marine Animals

Flying facts from underwater.

1. Is air the only place that animals fly or glide?
2. What are the underwater dynamics of marine animals?

<http://wings.avkids.com>

K-8 Internet Textbook (beginner, intermediate, and advanced level)

Click on Principles of Aerodynamics

Click on Animals

Click on Marine Animals

<http://www.aqua.org/animals/species/prrays.html>

Rays: Wings In The Water



General Resources

Be sure to investigate these great sites to learn more about Nature's Flyers.

<http://www.catskill.net/evolution/flight>

Flapping Wings! Nature's Flying Machines

Animals and wing structure

<http://scifiles.larc.nasa.gov>

The Case of The Challenging Flight

Shapes of Nature Activity: compare and contrast the shapes and designs of animals to airplanes (Segment 3)

<http://www.nwf.org/nationalwildlife/flight.html>

Conventional law of aerodynamics as it applies to animals and insects

<http://www.quest.arc.nasa.gov/aero/background/>

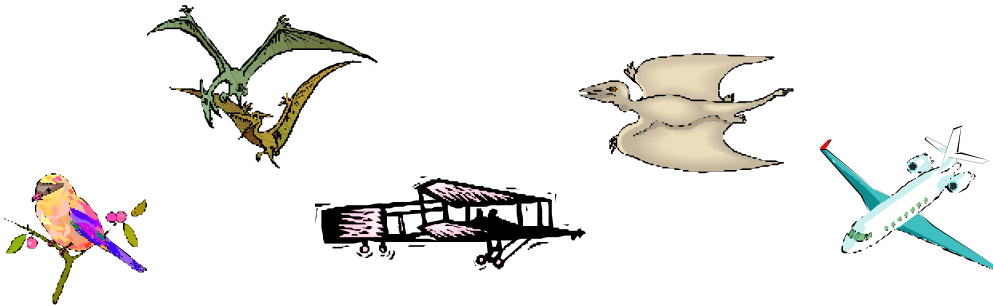
Aerospace Team On-Line

Chapter on Aerodynamics of animals



Now It Is Your Turn!!!!

What is your opinion? Have scientists learned something about flying from animals? Be sure to explain your opinion by using your research. How have they used this information? Be sure to use your research to back up your claim.



TEACHERS NOTES

The intent of a subject sampler is to present learners with a small number of Web sites organized around a main topic. These Web sites are designed to wet the learner's interest to delve farther into the topic. The subject sampler becomes a springboard for the learner and the teacher.

Key Question: How did "Nature's Flyers" influence the development of man-made flight?

KINDERGARTEN/FIRST GRADE

One of the largest drawbacks for Kindergarten and First grade using Web activities is that the readability of the sites is often not appropriate for the developmental level of the learner. For that reason, it is suggested that this activity is done either as a whole group lesson with a presentation station or in small groups with a teacher, perhaps as a center within the classroom that students rotate through. Students should design and keep a journal of the information uncovered during their experiences. The journal recordings should reflect the level of the student, from pictorial representations to written communications. The learner's inferences should also be reflected in the journal and/or through class discussions. These reflections could be listed on a classroom chart with the student's initials next to their contribution. It is important to give students the opportunity to express their inferences and discuss them. This is a valuable imbedded assessment tool for the teacher and allows for the identification of misconceptions that can be addressed early in the learning experience. This experience enhances the critical thinking ability of early learners. To wrap up what the students have learned use a Venn diagram to compare "Nature's Flyers" and the airplane.

SECOND AND THIRD GRADE

The learners in second and third grade should work in partners to complete the Subject Sampler. Each student should design a journal and keep a record of their findings in that journal. The journal should reflect not only factual information but also their inferences about the relationship of "Nature's Flyers" and man made flight. To wrap up what the students have learned each group should create a presentation for the class highlighting influences "Nature's Flyers" had on man-made flight. This is a natural for a lesson on fact and opinion. Students should represent the facts and their opinions so that the audience is aware of the difference.

STANDARDS

Life Science Content Standard C

All students will develop an understanding of the characteristics of organisms.

Science and Technology Content Standard E

All students will develop abilities to distinguish between natural objects and objects made by humans.